0068921

SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 MJD 2-22-06
INITIAL/DATE

COMMENTS:

SDG K0095 **SAF-RC-030**

Waste Site: 100-D-50:5

Date: 14 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Site 100-D-50:5
Subject: Inorganics - Data Package No. K0095-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0095 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10L58	11/7/05	Solid	C	See note 1
J10L59	11/7/05	Solid	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

· **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to an matrix spike recovery outside QC limits (57.9%), all antimony results

were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (42.7%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10L58/J10L59) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All selenium, cadmium and silver results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0095 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (47.9%), all antimony results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (42.7%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All selenium, cadmium and silver results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: k0095	REVIEWER: TLF	Project: 100-D-50-5	PAGE: 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Antimony	J	All	MS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Lab: LLI	SDG: K0095								
Sample Number		J10L58		J10L59					
Remarks				Duplicate					
Sample Date		11/7/05		11/7/05					
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	1.1	U	0.96	U				
Aluminum		5380		4780					
Arsenic	10	2.6		2.3	U				
Boron		2.1	U	1.8	U				
Barium	2	81.7		70.5					
Beryllium		0.13		0.11					
Calcium		8890		7680					
Cadmium	0.2	0.53	U	0.48	U				
Cobalt		6.5		5.4					
Chromium	1	9.7		9.1					
Copper		15.4		13.4					
Iron		16900		14300					
Mercury	0.2	0.04		0.04					
Potassium		1150		1060					
Magnesium		3580		3250					
Manganese		294		262					
Molybdenum		0.99	U	0.89	U				
Sodium		159		147					
Nickel		10.5		9.7					
Lead	5	14.3		12.1					
Antimony		3.1	UJ	2.7	UJ				
Selenium	1	2.7	U	2.5	U				
Silicon		558	J	620	J				
Vanadium		34.3		28.6					
Zinc	1	140		119					

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10L58	Silver, Total	1.1	u	MG/KG	1.1	6.0
		Aluminum, Total	5380		MG/KG	11.6	3.0
		Arsenic, Total	2.6		MG/KG	2.6	6.0
		Boron, Total	2.1	u	MG/KG	2.1	6.0
		Barium, Total	81.7		MG/KG	0.15	6.0
		Beryllium, Total	0.13		MG/KG	0.08	3.0
		Calcium, Total	8890		MG/KG	9.1	6.0
		Cadmium, Total	0.53	u	MG/KG	0.53	6.0
		Cobalt, Total	6.5		MG/KG	0.92	6.0
		Chromium, Total	9.7		MG/KG	1.2	6.0
		Copper, Total	15.4		MG/KG	1.1	3.0
		Iron, Total	16900		MG/KG	24.5	6.0
		Mercury, Total	0.04		MG/KG	0.02	1.0
		Potassium, Total	1150		MG/KG	42.3	6.0
		Magnesium, Total	3580		MG/KG	10.3	6.0
		Manganese, Total	294		MG/KG	0.15	6.0
		Molybdenum, Total	0.99	u	MG/KG	0.99	6.0
		Sodium, Total	159		MG/KG	1.3	6.0
		Nickel, Total	10.5		MG/KG	0.99	6.0
		Lead, Total	14.3		MG/KG	2.4	6.0
		Antimony, Total	3.1	u J	MG/KG	3.1	6.0
		Selenium, Total	2.7	u	MG/KG	2.7	6.0
		Silicon, Total	558	J	MG/KG	6.3	6.0
		Vanadium, Total	34.3		MG/KG	0.69	6.0
		Zinc, Total	140		MG/KG	0.38	6.0

2/12/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J10L59	Silver, Total	0.96	u	MG/KG	0.96	6.0
		Aluminum, Total	4780		MG/KG	10.4	3.0
		Arsenic, Total	2.3	u	MG/KG	2.3	6.0
		Boron, Total	1.8	u	MG/KG	1.8	6.0
		Barium, Total	70.5		MG/KG	0.14	6.0
		Beryllium, Total	0.11		MG/KG	0.07	3.0
		Calcium, Total	7680		MG/KG	8.1	6.0
		Cadmium, Total	0.48	u	MG/KG	0.48	6.0
		Cobalt, Total	5.4		MG/KG	0.82	6.0
		Chromium, Total	9.1		MG/KG	1.1	6.0
		Copper, Total	13.4		MG/KG	0.99	3.0
		Iron, Total	14300		MG/KG	21.9	6.0
		Mercury, Total	0.04		MG/KG	0.02	1.0
		Potassium, Total	1060		MG/KG	37.8	6.0
		Magnesium, Total	3250		MG/KG	9.2	6.0
		Manganese, Total	262		MG/KG	0.14	6.0
		Molybdenum, Total	0.89	u	MG/KG	0.89	6.0
		Sodium, Total	147		MG/KG	1.2	6.0
		Nickel, Total	9.7		MG/KG	0.89	6.0
		Lead, Total	12.1		MG/KG	2.1	6.0
		Antimony, Total	2.7	u J	MG/KG	2.7	6.0
		Selenium, Total	2.5	u	MG/KG	2.5	6.0
		Silicon, Total	620	J	MG/KG	5.6	6.0
		Vanadium, Total	28.6		MG/KG	0.61	6.0
		Zinc, Total	119		MG/KG	0.34	6.0

V
2/12/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030
LVL#: 0511L674
SDG/SAF#: K0095/RC-030

W.O.#: 11343-606-001-9999-00
Date Received: 11-09-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with 6-fold dilutions for ICP metals due to high concentrations and sample matrix. The samples were rerun with 3-fold dilutions on a different instrument due to sample matrix.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 42.7%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J10L58	Aluminum	72,000	95.4
	Iron	120,000	108.5
	Antimony	600	105.0
	Silicon	12,600	102.7

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

jjw/m11-674

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-030-031 Page 1 of 1

Collector STANKOVICH/HUDSON	**Company Contact** Mike Stankovich	**Telephone No.** 531-7620	**Project Coordinator** KESSNER, JH
Project Designation Remaining Sites Confirmation Sampling - Other Solid	**Sampling Location** 100-D-50:5		**SAF No.** RC-030
Ice Chest No. AFS-04_120	**Field Logbook No.** EL-1578	**COA** R10DR16700	**Method of Shipment** FedEx
Shipped To EBERLINE SERVICES / IONVILLE	**Offsite Property No.** A060108		**Bill of Lading/Air Bill No.** See DSAC

Price Code 9C **Data Turnaround** 15 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

91000016

SAMPLE ANALYSIS													
Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	500mL	60mL	60mL	60mL	60mL	250mL				
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOAs - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**										
J10L58	OTHER SOLID	11/7/05	1445		X	X							
J10L59	OTHER SOLID	11/7/05	1445		X	X							
J10L60	OTHER SOLID	11/7/05											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**
Bill Hudson	11/7/05 1700	3728 Bldg #28	11/7/05 1700
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**
3728 Ref 28	11/8/05 1000	D St John	11/8/05 1000
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**
D St John	11/8/05 1000	Fed Ex	
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**
Fed Ex	11/9/05 0935		11/9/05 0935
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**
Relinquished By/Removed From	**Date/Time**	**Received By/Stored In**	**Date/Time**

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 – Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium

(2) ICP Metals - 6010A (SW-846) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	**Received By**	**Title**	**Date/Time**
FINAL SAMPLE DISPOSITION	**Disposal Method**	**Disposed By**	**Date/Time**

10000000

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-5015			DATA PACKAGE: K0095		
VALIDATOR: TLI		LAB: LCI		DATE: 2/14/06	
			SDG: K0095		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J10D58 J10D59					
soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FR

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: MS 57.9 – J antimony no pts
LCS 42.7 – J silicon

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A
Duplicate injection %RSD values acceptable? ..... Yes No N/A
Analytical spikes performed as required? ..... Yes No N/A
Analytical spike recoveries acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
MSA performed as required? ..... Yes No N/A
MSA results acceptable? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Rresults supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No (N/A)

Detection limits meet RDL? ..... Yes (No) N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: Selenium, Cadmium + Silver - all over

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0657-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	3.0 u	MG/KG	3.0	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	2.6	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.29 u	MG/KG	0.29	1.0
		Iron, Total	3.2 u	MG/KG	3.2	1.0
		Potassium, Total	5.5 u	MG/KG	5.5	1.0
		Magnesium, Total	1.4 u	MG/KG	1.4	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	0.67	MG/KG	0.17	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.59	MG/KG	0.36	1.0
		Silicon, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0267-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10L58	Silver, Total	5.2	1.1 u	6.4	81.2	6.0
		Aluminum, Total	6120	5380	255	290.9*	3.0
		Arsenic, Total	246	2.6	255	95.5	6.0
		Boron, Total	126	2.1 u	127	99.1	6.0
		Barium, Total	324	81.7	255	95.2	6.0
		Beryllium, Total	6.1	0.13	6.4	93.3	3.0
		Calcium, Total	12500	8890	3180	113.5	6.0
		Cadmium, Total	5.5	0.53u	6.4	85.9	6.0
		Cobalt, Total	66.0	6.5	63.7	93.4	6.0
		Chromium, Total	35.5	9.7	25.5	101.2	6.0
		Copper, Total	43.1	15.4	31.8	87.1	3.0
		Iron, Total	16000	16900	127	-650. *	6.0
		Mercury, Total	0.25	0.04	0.20	111.3	1.0
		Potassium, Total	4290	1150	3180	98.7	6.0
		Magnesium, Total	6750	3580	3180	99.4	6.0
		Manganese, Total	356	294	63.7	96.5*	6.0
		Molybdenum, Total	120	0.99u	127	94.2	6.0
		Sodium, Total	3320	159	3180	99.3	6.0
		Nickel, Total	72.1	10.5	63.7	96.7	6.0
		Lead, Total	75.9	14.3	63.7	96.7	6.0
		Antimony, Total	36.9	3.1 u	63.7	57.9	6.0
		Selenium, Total	250	2.7 u	255	98.0	6.0
		Silicon, Total	903	558	127	270.8*	6.0
		Vanadium, Total	89.5	34.3	63.7	86.7	6.0
		Zinc, Total	201	140	63.7	95.0	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J10L58	Silver, Total	1.1 u	1.1 u	NC	6.0
		Aluminum, Total	5380	5470	1.7	3.0
		Arsenic, Total	2.6	2.6 u	~~NC~~ 200 MW 11/21/05	6.0
		Boron, Total	2.1 u	2.1 u	NC	6.0
		Barium, Total	81.7	77.2	5.7	6.0
		Beryllium, Total	0.13	0.08	44.4	3.0
		Calcium, Total	8890	10600	17.6	6.0
		Cadmium, Total	0.53u	0.53u	NC	6.0
		Cobalt, Total	6.5	5.9	9.7	6.0
		Chromium, Total	9.7	9.2	5.3	6.0
		Copper, Total	15.4	15.9	3.2	3.0
		Iron, Total	16900	16000	5.3	6.0
		Mercury, Total	0.04	0.04	22.2	1.0
		Potassium, Total	1150	1190	3.8	6.0
		Magnesium, Total	3580	3580	0.18	6.0
		Manganese, Total	294	290	1.2	6.0
		Molybdenum, Total	0.99u	0.99u	NC	6.0
		Sodium, Total	159	165	3.9	6.0
		Nickel, Total	10.5	9.8	6.9	6.0
		Lead, Total	14.3	14.2	0.70	6.0
		Antimony, Total	3.1 u	3.1 u	NC	6.0
		Selenium, Total	2.7 u	2.9	~~NC~~ 200 MW 11/21/05	6.0
		Silicon, Total	558	664	17.4	6.0
		Vanadium, Total	34.3	32.1	6.6	6.0
		Zinc, Total	140	133	5.3	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/18/05

CLIENT: TNUHANFORD RC-030 K0095 LVL LOT #: 0511L674

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0657-LC1	Silver, LCS	49.0	50.0	MG/KG	98.0
		Aluminum, LCS	477	500	MG/KG	95.4
		Arsenic, LCS	932	1000	MG/KG	93.2
		Boron, LCS	482	500	MG/KG	96.3
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Calcium, LCS	2540	2500	MG/KG	101.7
		Cadmium, LCS	25.2	25.0	MG/KG	100.8
		Cobalt, LCS	248	250	MG/KG	99.1
		Chromium, LCS	50.5	50.0	MG/KG	101.0
		Copper, LCS	118	125	MG/KG	94.6
		Iron, LCS	507	500	MG/KG	101.3
		Potassium, LCS	2400	2500	MG/KG	96.1
		Magnesium, LCS	2450	2500	MG/KG	98.0
		Manganese, LCS	78.5	75.0	MG/KG	104.7
		Molybdenum, LCS	500	500	MG/KG	100
		Sodium, LCS	2420	2500	MG/KG	96.8
		Nickel, LCS	199	200	MG/KG	99.6
		Lead, LCS	250	250	MG/KG	99.8
		Antimony, LCS	295	300	MG/KG	98.2
		Selenium, LCS	901	1000	MG/KG	90.1
		Silicon, LCS	214	500	MG/KG	42.7
		Vanadium, LCS	248	250	MG/KG	99.2
		Zinc, LCS	99.2	100	MG/KG	99.2
LCS1	05C0267-LC1	Mercury, LCS	6.8	6.2	MG/KG	109.7

Date: 14 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Site 100-D-50:5
Subject: PCB/Pesticide/Herbicide - Data Package No. K0095-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0095 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10L58	11/7/05	Solid	C	See note 1
J10L59	11/7/05	Solid	C	See note 1

1 – PCBs by 8082, pesticides by 8081A and chlorinated herbicides by 8151A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike recoveries outside QC limits (154% & 164%), all detected PCB results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to RPDs outside QC limits (44% & 43%), all PCB results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J10L58/J10L59) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene, dalpon, dichloroprop and 2,4-DB results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data Package No. K0095 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to matrix spike recoveries outside QC limits (154% & 164%), all detected PCB results were qualified as estimates and flagged "J". Due to RPDs outside QC limits (44% & 43%), all PCB results were qualified as estimates and flagged "J".
Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All toxaphene, dalpon, dichloroprop and 2,4-DB results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB/PESTICIDE/HERBICIDE DATA QUALIFICATION SUMMARY*

SDG: K0095	REVIEWER: TLI	Project: 100-D-50.5	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All PCBs	J	All detected results	MS recovery
All PCBs	J	All	RPD
Toxaphene	J	All	No MS, MSD or LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB/PESTICIDE/HERBICIDE ANALYSIS, SOLID MATRIX, (UG/KG) Page__1__ of__2__

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0095				
Sample Number		J10L58		J10L59	
Remarks				Duplicate	
Sample Date		11/7/05		11/7/05	
Extraction Date		11/11/05		11/11/05	
Analysis Date		11/15/05		11/15/05	
PCB	RQL	Result	Q	Result	Q
Aroclor-1016	100	91	UJ	81	UJ
Aroclor-1221	100	91	UJ	81	UJ
Aroclor-1232	100	91	UJ	81	UJ
Aroclor-1242	100	15	J	81	UJ
Aroclor-1248	100	91	UJ	81	UJ
Aroclor-1254	100	91	UJ	81	UJ
Aroclor-1260	100	9.4	J	11	J
Sample Number		J10L58		J10L59	
Remarks				Duplicate	
Sample Date		11/7/05		11/7/05	
Extraction Date		11/11/05		11/11/05	
Analysis Date		11/16/05		11/16/05	
Pesticide	RQL	Result	Q	Result	Q
Alpha-BHC	5	3.6	U	3.2	U
Gamma-BHC (Lindane)	5	3.6	U	3.2	U
Beta-BHC	5	3.6	U	3.2	U
Heptachlor	5	3.6	U	3.2	U
Delta-BHC	5	3.6	U	3.2	U
Aldrin	5	3.6	U	3.2	U
Heptachlor Epoxide	5	3.6	U	3.2	U
gamma-Chlordane	5	3.6	U	3.2	U
Endosulfan I	5	3.6	U	3.2	U
alpha-Chlordane	5	3.6	U	3.2	U
4,4'-DDE	5	3.6	U	3.2	U
Dieldrin	5	3.6	U	3.2	U
Endrin	5	3.6	U	3.2	U
4,4'-DDD	5	3.6	U	3.2	U
Endosulfan II	5	3.6	U	3.2	U
4,4'-DDT	5	4.0		3.1	
Endrin Aldehyde	5	3.6	U	3.2	U
Endosulfan sulfate	5	3.6	U	3.2	U
Methoxychlor	5	3.6	U	3.2	U
Endrin ketone	5	3.6	U	3.2	U
Toxaphene	5	36	UJ	32	UJ

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0095				
Sample Number		J10L58		J10L59	
Remarks				Duplicate	
Sample Date		11/7/05		11/7/05	
Extraction Date		11/11/05		11/11/05	
Analysis Date		11/18/05		11/18/05	
Herbicides	RQL	Result	Q	Result	Q
Dalapon	100	230	U	200	U
Dicamba	100	91	U	81	U
Dichloroprop	100	230	U	200	U
2,4-D	100	45	U	41	U
2,4,5-TP (Silvex)	100	23	U	20	U
2,4,5-T	100	23	U	20	U
2,4-DB	100	230	U	200	U
Dinoseb	100	23	U	20	U
Pentachlorophenol	100	18	U	16	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/22/05 12:06

RFW Batch Number: 0511L674 Client: TNUHANFORD RC-030 K0095 Work Order: 11343606001 Page: 1

	Cust ID:	J10L58	J10L59	J10L59	J10L59	PBLKWF	PBLKWF BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	05LE0892-MB1	05LE0892-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	84 %	69 %	112 %	78 %	73 %	67 %
	Decachlorobiphenyl	77 %	73 %	119 %	80 %	78 %	86 %
Aroclor-1016		91 U J	81 U J	154 * %	98 %	33 U	96 %
Aroclor-1221		91 U J	81 U J	81 U	81 U	33 U	33 U
Aroclor-1232		91 U J	81 U J	81 U	81 U	33 U	33 U
Aroclor-1242		15 J	81 U J	81 U	81 U	33 U	33 U
Aroclor-1248		91 U J	81 U J	81 U	81 U	33 U	33 U
Aroclor-1254		91 U J	81 U J	81 U	81 U	33 U	33 U
Aroclor-1260		9.4 J	11 J	164 * %	104 %	33 U	114 %

9000000000

0000012

V
2/12/06

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

11/22/05

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List — Report Date: 11/22/05 11:29

RFW Batch Number: 0511L674 — Client: TNUHANFORD RC-030 K0095 — Work Order: 11343606001 — Page: 1

	Cust ID:	J10L58	J10L58	J10L58	J10L59	PBLKWF	PBLKWF BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	05LE0892-MB1	05LE0892-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	91 %	88 %	81 %	101 %	71 %	81 %
	Decachlorobiphenyl	96 %	93 %	77 %	97 %	73 %	76 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		3.6 U	100 %	99 %	3.2 U	0.33 U	107 %
gamma-BHC (Lindane)		3.6 U	105 %	102 %	3.2 U	0.33 U	104 %
Beta-BHC		3.6 U	105 %	103 %	3.2 U	0.33 U	101 %
Heptachlor		3.6 U	113 %	106 %	3.2 U	0.33 U	102 %
Delta-BHC		3.6 U	100 %	95 %	3.2 U	0.33 U	110 %
Aldrin		3.6 U	103 %	96 %	3.2 U	0.33 U	86 %
Heptachlor epoxide		3.6 U	105 %	98 %	3.2 U	0.33 U	97 %
gamma-Chlordane		3.6 U	102 %	94 %	3.2 U	0.33 U	99 %
Endosulfan I		3.6 U	106 %	99 %	3.2 U	0.33 U	98 %
alpha-Chlordane		3.6 U	104 %	97 %	3.2 U	0.33 U	98 %
4,4'-DDE		3.6 U	110 %	102 %	3.2 U	0.33 U	106 %
Dieldrin		3.6 U	104 %	97 %	3.2 U	0.33 U	101 %
Endrin		3.6 U	111 %	103 %	3.2 U	0.33 U	101 %
4,4'-DDD		3.6 U	136 * %	124 * %	3.2 U	0.33 U	136 * %
Endosulfan II		3.6 U	118 %	108 %	3.2 U	0.33 U	116 %
4,4'-DDT		4.0	92 %	83 %	3.1 J	0.33 U	104 %
Endrin aldehyde		3.6 U	99 %	94 %	3.2 U	0.33 U	90 %
Endosulfan sulfate		3.6 U	99 %	93 %	3.2 U	0.33 U	93 %
Methoxychlor		3.6 U	108 %	96 %	3.2 U	0.33 U	96 %
Endrin ketone		3.6 U	98 %	92 %	3.2 U	0.33 U	87 %
Toxaphene		36 UJ	36 U	36 U	32 UJ	3.3 U	3.3 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

2/12/06

11/22/05

Lionville Laboratory, Inc.
Herbicides, Special List

Report Date: 11/28/05 14:11

RFW Batch Number: 0511L674 Client: TNUHANFORD RC-030 K0095 Work Order: 11343606001 Page: 1

	Cust ID:	J10L58	J10L58	J10L58	J10L59	PBLKWJ	PBLKWJ BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	05LK0904-MB1	05LK0904-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate:	DCAA	81 % fl	88 % fl	84 % fl	89 % fl	68 % fl	48 % fl
Dalapon		230 U	86 %	99 %	200 U	170 U	32 %
Dicamba		91 U	67 %	68 %	81 U	67 U	32 %
Dichloroprop		230 U	88 %	89 %	200 U	170 U	45 %
2,4-D		45 U	96 %	87 %	41 U	33 U	41 %
2,4,5-TP (Silvex)		23 U	92 %	92 %	20 U	17 U	51 %
2,4,5-T		23 U	89 %	91 %	20 U	17 U	46 %
2,4-DB		230 U	104 %	112 %	200 U	170 U	63 %
Dinoseb		23 U	106 %	113 %	20 U	17 U	103 %
Pentachlorophenol		18 U	112 %	116 %	16 U	13 U	54 %

0000014

0000000004

2/12/06

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L674
SDG/SAF # K0095/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

PCB

Two (2) solid samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted on 11-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-16-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The samples were extracted and analyzed within required holding time.
3. Samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. Two (2) of four (4) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR #05GC537) has been enclosed.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. Patterns for Aroclors 1242, 1260 were identified in these samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.
11. Copies of the following SDR's are associated with this narrative, 05GC530 and 05GC537.
12. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

kim\r:\group\data\pest\tnu hanford\0511-674.pcbs

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C530

Initiator: DS
Date: 11/21/05
Client: QA

Batch: ICAL
Samples:
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix:
Prep Batch:

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date:

c. Problem (Include all relevant specific results; attach data if necessary) PCB 1660 ICAL ANALYZED 11/14/05 WAS INADVERTANTLY DONE USING A CURVE THAT EXPIRED ON 11/8/05 HOWEVER THE ICV USED TO CHECK CALIBRATION MET CRITERIA VALIDATING EXPIRED CURVE. PCB STDS ARE GENERALLY STABLE. NO DATA IMPACTED SIGNIFICANTLY COPY OF SDR WILL BE KEPT WITH STDS.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples:
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date:
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person
__ Add
__ Cancel

5. Final Action...signature/date: Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin:
		__	__ Other:

QA-105-A-0805

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C537

Initiator: John Lach
Date: 11/22/05
Client: TTU

Batch: 05111674
Samples: 25
Method: SW846/MCAWW/CLP/

Parameter: PCB
Matrix: Solid
Prep Batch: 05LE0812

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Aroclor 1016 elevated @ 154% in the matrix spike.
Aroclor 1260 elevated @ 164% in the matrix spike.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:
Narrate. No hits in the sample above the reporting limit. The MSD RPDs are in control.

4. Project Manager Instructions...signature/date: 11/28/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR
__	X Initiator
__	X Lab General Manager: M. Taylor
__	X Project Mgr: Stone/Johnson
__	__ Data Management: Stilwell
__	__ Sample Prep: Beegle/Kiger

Route	Distribution of Completed SDR
__	__ Metals: Beegle
__	__ Inorganic: Perrone
__	__ GC/LC: Kiger
__	__ MS: Rychlak/Daley
__	__ Log-in: Perry
__	__ Admin: _____
__	__ Other: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L674
SDG/SAF # K0095/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

Chlorinated Pesticides

Two (2) soil samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted on 11-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. Samples and their associated QC samples received Copper-Sulfur cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. One (1) of twenty (20) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR # 05GC535) has been enclosed.
7. Two (2) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR 05GC535) has been enclosed.
8. All samples required a 4-fold instrument dilutions due to matrix.
9. Copies of the following SDR's are associated with this Narrative, 05GC523 and 05GC535
10. The initial calibrations associated with this data set were within acceptance criteria.
11. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
12. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/22/05
Date

kim\r:\group\data\pest\tnu hanford\0511-677.pest

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C535

Initiator: John Leach
Date: 11/22/05
Client: TMV

Batch: 05111674, 675
Samples: BS, MS, MSD
Method: SW846/MCAWW/CLP/

Parameter: 8081 Pesticides
Matrix: Soil/Solid
Prep Batch: 05LE0892

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Blank Spike elevated for 4,4'-DDD
matrix QC elevated for some compounds.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Narrate. No hits were found for compounds elevated, the ability to detect those compounds was not diminished.

4. Project Manager Instructions...signature/date: _____
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 11/22/05

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0511L674
SDG/SAF # K0095/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 11-09-2005

HERBICIDE

Two (2) solid samples were collected on 11-07-2005.

The samples and their associated QC samples were extracted on 11-15-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-18-2005. The extraction and analysis procedures were based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

2. Samples were extracted and analyzed within required holding time.

3. The method blank was below the reporting limits for all target compounds.

4. All surrogate recoveries were within acceptance criteria.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The initial calibrations associated with this data set were within acceptance criteria.

8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/29/5
Date

som\r:\group\data\herb\tnu\0511-674.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-031	Page 1 of 1
Collector: STANKOVICH/HUDSON	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH	Price Code: 9C
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-50:5		SAF No.: RC-030	Air Quality ☐
Ice Chest No.: AFS-04_120	Field Logbook No.: EL-1578	COA: R10DR16700	Method of Shipment: FedEx	Data Turnaround: 15 Days
Shipped To: EBERLINE SERVICES / HONVILLE	Offsite Property No.: A060108		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

220000

SAMPLE ANALYSIS											
Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	500mL	60mL	60mL	60mL	60mL	250mL					
	See item (1) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
J10L58	OTHER SOLID	11/7/05	1445		X	X					
J10L59	OTHER SOLID	11/7/05	1445		X	X					
J10L60	OTHER SOLID	11/7/05									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: BILL HUDSON	Date/Time: 11/7/05 1700	Received By/Stored In: 3728 Bldg Rm 28	Date/Time: 11/7/05 1700
Relinquished By/Removed From: 3728 Rm 28	Date/Time: 11/8/05 1000	Received By/Stored In: D St. John	Date/Time: 11/8/05 1000
Relinquished By/Removed From: D St. John	Date/Time: 11/8/05 1000	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 11/9/05 0935	Received By/Stored In:	Date/Time: 11/9/05 0935
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

0000000007

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D+50:5			DATA PACKAGE: K0095		
VALIDATOR: TLT		LAB: LLI		DATE: 2/11/06	
			SDG: K0095		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	8151A	
SAMPLES/MATRIX					
J10L58 J10L59					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... (Yes) No N/A
Surrogate recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: no toxaphene MS, MSD or LCS - J all PCB 154 + 164 - J all dates (3)
no PAS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: PCB 44 + 43% RPD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes	No	N/A
Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: See over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 14 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Site 100-D-50:5
Subject: Radiochemistry - Data Package No. K0095-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0095 prepared by Eberline Services. (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10L58	11/7/05	Solid	C	See note 1
J10L59	11/7/05	Solid	C	See note 1

1 – Gross alpha/beta, total uranium and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If

either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (58%), all thorium-232 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J10L58/J10L59) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Ten analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0095 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (58%), all thorium-232 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Ten analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0095	REVIEWER: TLI	Project: 100-D-50-5	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-232	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Laboratory: EB	SDG: K0095								
Sample Number		J10L58		J10L59					
Remarks				Duplicate					
Sample Date		11/7/05		11/7/05					
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Gross Alpha		6.39		4.73					
Gross Beta		14.6		13.4					
Total uranium (ug/g)		0.870		0.852					
Potassium-40		9.26		9.42					
Cobalt 60	0.05	U	U*	U	U*				
Cesium 137	0.05	U	U*	U	U*				
Radium-226		0.413		0.440					
Radium-228		0.729		0.292	U				
Europium 152	0.1	U	U*	U	U*				
Europium 154	0.1	U	U*	U	U*				
Europium 155	0.1	U	U*	U	U*				
Thorium-228		0.550		0.397					
Thorium-232		0.729	J	0.292	J				
Uranium-235(gea)		U	U	U	U				
Uranium-238(gea)		U	U	U	U				
Americium-241(gea)		U	U	U	U				

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0095

R511108-01 J10L58

DATA SHEET

SDG 7771	Client/Case no Hanford	SDG K0095	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R511108-01	Client sample id J10L58		
Dept sample id 7771-001	Location/Matrix 100-D-50:5	SOLID	
Received 11/09/05	Collected/Weight 11/07/05 14:45	622 g	
% solids 100.0	Custody/SAF No RC-030-031	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	6.39	3.2	3.4	10		93A
Gross Beta	12587-47-2	14.6	4.0	5.5	15		93B
Total Uranium (ug/g)	7440-61-1	0.870	0.10	0.019	1.0		U_T
Potassium 40	13966-00-2	9.26	1.4	0.93			GAM
Cobalt 60	10198-40-0	U		0.093	0.050	U	GAM
Cesium 137	10045-97-3	U		0.091	0.10	U	GAM
Radium 226	13982-63-3	0.413	0.19	0.15	0.10		GAM
Radium 228	15262-20-1	0.729	0.39	0.35	0.20		GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	U		0.31	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.550	0.11	0.11			GAM
Thorium 232	TH-232	0.729	0.39	0.35		4	GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.16		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

2/12/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

R511108-02 J10L59

D A T A S H E E T

SDG	7771	Client/Case no	Hanford SDG K0095
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R511108-02	Client sample id	J10L59
Dept sample id	7771-002	Location/Matrix	100-D-50:5 SOLID
Received	11/09/05	Collected/Weight	11/07/05 14:45 661 g
% solids	100.0	Custody/SAF No	RC-030-031 RC-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.73	2.7	2.9	10		93A
Gross Beta	12587-47-2	13.4	3.9	5.3	15		93B
Total Uranium (ug/g)	7440-61-1	0.852	0.097	0.019	1.0		U_T
Potassium 40	13966-00-2	9.42	2.3	0.63			GAM
Cobalt 60	10198-40-0	U		0.073	0.050	U	GAM
Cesium 137	10045-97-3	U		0.16	0.10	U	GAM
Radium 226	13982-63-3	0.440	0.12	0.10	0.10		GAM
Radium 228	15262-20-1	0.292	0.21	0.25	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.397	0.091	0.097			GAM
Thorium 232	TH-232	0.292	0.21	0.25		J	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		7.5		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

2/12/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0095 was composed of two other solid samples designated under SAF No. RC-030 with a Project Designation of: Remaining Sites Confirmation Sampling – Other Solid. The Sampling Location was 100-D-50:5.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on November 30, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Senior Program Manager

12/07/05
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-031	Page 1 of 1
Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Air Quality ☐	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:5 K0095 (7771)		SAF No. RC-030		
Ice Chest No. 11/8/05 DAS AA AFS-04-057	Field Logbook No. EL-1578	COA R10DR16700	Method of Shipment FedEx		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060088		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE ~~HAZARDS/REMARKS~~

Non Rad

Special Handling and/or Storage

None

K0095

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	500mL	60mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time							
J10L58	OTHER SOLID	11/7/05	1445	X						
J10L59	OTHER SOLID	11/7/05	1445	X						
~~J10L60~~	~~OTHER SOLID~~	11/7/05								

B Hudson 11/7/05

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B Hudson B Hudson	11/7/05 1700	3728 BLDG #2B	11/7/05 1700
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
3728 Ref ZB	11/8/05 1000	P St John	11/8/05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
P St John	11/8/05 1000	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/09/05		11/09/05 9:20
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gamma Spec - Add-on {Americium-241}; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium; Strontium-89,90 Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238);~~ Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title		Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT:	100-D-30:5		DATA PACKAGE:	K0095	
VALIDATOR:	TCT	LAB:	EB	DATE:	2/1/01
			SDG:	K0095	

ANALYSES PERFORMED					
(Gross Alpha/Beta) (Total Uranium)	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	(Gamma Spectroscopy)	

SAMPLES/MATRIX
J10L59 J10L59
Soild

1. Completeness ..... ☐ N/A

Technical verification forms present?..... Yes (No) N/A

Comments:_____

_____

_____

_____

_____

2. Initial Calibration (Levels D, E) ..... ~~☐~~ N/A

Instruments/detectors calibrated?..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable?..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:_____

_____

_____

_____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

Method blank results acceptable? ..... Yes No N/A

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

Field blank results acceptable? ..... Yes No N/A

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

LCS/BSS recoveries acceptable? ..... Yes No N/A

LCS/BSS traceable? (Levels D,E) ..... Yes No N/A

LCS/BSS expired? (Levels D,E) ..... Yes No N/A

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: th 232 - 5870 - 5 all

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split sample(s) analyzed? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no MS or DUS

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses?	(Yes)	No	N/A
Results supported in raw data?(Levels D, E)	Yes	No	(N/A)
Results Acceptable? (Levels D, E)	Yes	No	(N/A)
Transcription/Calculation errors? (Levels D, E)	Yes	No	(N/A)
MDA's meet required detection limits?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: 10 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0095

R511108-04 Method Blank

METHOD BLANK

SDG 7771 Client/Case no Hanford SDG K0095
Contact Melissa C. Mannion Contract No. 630

Lab sample id R511108-04 Client sample id Method Blank
Dept sample id 7771-004 Material/Matrix SOLID
SAF No RC-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.696	1.7	4.2	10	U	93A
Gross Beta	12587-47-2	-0.637	3.4	6.0	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.008	0.019	1.0	U	U_T
Potassium 40	13966-00-2	U		0.49		U	GAM
Cobalt 60	10198-40-0	U		0.053	0.050	U	GAM
Cesium 137	10045-97-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	U		0.086	0.10	U	GAM
Radium 228	15262-20-1	U		0.18	0.20	U	GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.080	0.10	U	GAM
Thorium 228	14274-82-9	U		0.052		U	GAM
Thorium 232	TH-232	U		0.18		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		5.9		U	GAM
Americium 241	14596-10-2	U		0.074		U	GAM

Remain.Sites Confirm.Samp. - O.Solid

QC-BLANK #55090

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0095

R511108-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7771

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0095

Contract No. 630

Lab sample id R511108-03

Dept sample id 7771-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	261	20	4.0	10		93A	214	8.6	122	60-140	70-130
Gross Beta	208	11	5.6	15		93B	198	7.9	105	74-126	70-130
Total Uranium (ug/g)	32.4	3.8	0.19	1.0		U_T	33.0	1.3	98	77-123	80-120
Cobalt 60	1.64	0.12	0.056	0.050		GAM	1.53	0.061	107	72-128	80-120
Cesium 137	1.55	0.094	0.065	0.10		GAM	1.52	0.061	102	75-125	80-120

Remain.Sites Confirm.Samp. - O.Solid

QC-LCS #55089

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/30/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0095

R511108-05 J10L58

DUPLICATE

SDG 7771 Client/Case no Hanford SDG K0095

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R511108-05	Lab sample id	R511108-01	Client sample id	J10L58
Dept sample id	7771-005	Dept sample id	7771-001	Location/Matrix	100-D-50:5 SOLID
		Received	11/09/05	Collected/Weight	11/07/05 14:45 622 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-030-031 RC-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	7.36	3.6	4.0	10		93A	6.39	3.2	3.4		14	113	0.4
Gross Beta	13.6	4.3	5.7	15		93B	14.6	4.0	5.5		7	70	0.3
Total Uranium (ug/g)	0.872	0.10	0.019	1.0		U_T	0.870	0.10	0.019		0	31	0
Potassium 40	8.23	1.2	0.72			GAM	9.26	1.4	0.93		12	45	0.8
Cobalt 60	U		0.059	0.050	U	GAM	U		0.093	U	-		0.6
Cesium 137	U		0.18	0.10	U	GAM	U		0.091	U	-		0.9
Radium 226	0.388	0.11	0.11	0.10		GAM	0.413	0.19	0.15		6	88	0.2
Radium 228	0.400	0.34	0.34	0.20		GAM	0.729	0.39	0.35		58	141	1.2
Europium 152	U		0.17	0.10	U	GAM	U		0.23	U	-		0.4
Europium 154	U		0.19	0.10	U	GAM	U		0.31	U	-		0.7
Europium 155	U		0.14	0.10	U	GAM	U		0.18	U	-		0.3
Thorium 228	0.538	0.10	0.11			GAM	0.550	0.11	0.11		2	52	0.1
Thorium 232	0.400	0.34	0.34			GAM	0.729	0.39	0.35		58	141	1.2
Uranium 235	U		0.20		U	GAM	U		0.28	U	-		0.5
Uranium 238	U		6.5		U	GAM	U		10	U	-		0.6
Americium 241	U		0.23		U	GAM	U		0.16	U	-		0.5

Remain.Sites Confirm.Samp. - O.Solid

QC-DUP#1 55091

DUPLICATES
Page 1
SUMMARY DATA SECTION
Page 9

000026

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/30/05